

the bone of one of the vertebral bodies and said opposite lower surface adapted for placement toward the bone of the other of the vertebral bodies when said Implant is placed between the adjacent vertebral bodies; and

B₁ a first plurality of bone engaging structures formed on said upper and lower surfaces, at least one of said first plurality of bone engaging structures comprising a surface projection having at least one forward facing facet directed at least in part toward said leading end and at least one rearward portion directed at least in part toward said trailing end, said forward facet and said rearward portion having a length and a slope, the length of said forward facet being longer than the length of said rearward portion, the slope of said rearward portion being steeper than the slope of said forward facet, said projections having opposed side facets between said forward facet and said rearward portion, each of said side facets having at least a first portion in a plane passing through the longitudinal axis of said implant at an angle to the longitudinal axis.

146. (Twice amended) An interbody spinal implant for insertion between adjacent vertebral bodies of a human spine, said implant comprising:

B₂ a leading end for introduction of said spinal implant into the spine, an opposite trailing end, spaced apart sides therebetween, and a longitudinal axis passing through said leading and trailing ends;

opposite upper and lower surfaces between said leading and trailing ends and said spaced apart sides, said upper surface adapted for placement in engagement with the bone of one of the vertebral bodies and said opposite lower surface adapted for placement toward the bone of the other of the vertebral bodies when said Implant is placed between the adjacent vertebral bodies; and

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a plurality of bone engaging structures formed on said upper and lower surfaces, at least one of said plurality of bone engaging structures comprising a surface projection having at least a left forward side facet and a right forward side facet directed at least in part toward said leading end and said sides, respectively, and a single rearward facet directed at least in part toward said trailing end, said left and right forward side facets having at least a first portion in a plane at an angle to the longitudinal axis of said implant.

Please add the following new claims:

--203. An interbody spinal implant for insertion between adjacent vertebral bodies of a human spine, said implant comprising:

a leading end for introduction of said spinal implant into the spine, an opposite trailing end, spaced apart sides therebetween, and a longitudinal axis passing through said leading and trailing ends;

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opposite upper and lower surfaces between said leading and trailing ends and said spaced apart sides, said upper surface adapted for placement in engagement with the bone of one of the vertebral bodies and said opposite lower surface adapted for placement toward the bone of the other of the vertebral bodies when said implant is placed between the adjacent vertebral bodies;

a first plurality of bone engaging structures formed on said upper and lower surfaces, at least one of said first plurality of bone engaging structures comprising a surface projection having at least one forward facing facet directed at least in part toward said leading end and at least one rearward portion directed at least in part toward said trailing end, said forward facet and said rearward portion having a length

57 and a slope, the length of said forward facet being longer than the length of said rearward portion, the slope of said rearward portion being steeper than the slope of said forward facet, said projections having opposed side facets between said forward facet and said rearward portion, each of said side facets having at least a first portion in a plane passing through the longitudinal axis of said implant at an angle to the longitudinal axis;

146 a second plurality of bone engaging structures formed on said upper and lower surfaces, at least one of said second plurality of bone engaging structures comprising a surface projection having at least a left forward side facet and a right forward side facet directed at least in part toward said leading end and said sides, respectively, and a single rearward facet directed at least in part toward said trailing end, said left and right forward side facets having at least a first portion in a plane at an angle to the longitudinal axis of said implant; and

157 137 a third plurality of bone engaging structures formed on said upper and lower surfaces, at least one of said third plurality of bone engaging structures comprising a surface projection having at least a left rearward side facet and a right rearward side facet directed at least in part toward said trailing end and said sides, respectively, and a single forward facet directed at least in part toward said leading end, said left and right rearward side facets having at least a first portion in a plane at an angle to the longitudinal axis of said implant.

204. The spinal implant of claim 203, wherein said rearward portion of said first plurality of bone engaging structures is perpendicular to at least one of said upper and lower surfaces of said implant.

205. The spinal implant of claim 203, wherein said rearward portion of said first plurality of bone engaging structures is at an angle to at least one of said upper and lower surfaces of said implant.

206. The spinal implant of claim 205, wherein said angle is less than 90 degrees.

207. The spinal implant of claim 205, wherein said angle is greater than 90 degrees.

208. The spinal implant of claim 203, wherein said opposed side facets of said first plurality of bone engaging structures intersect each other.

209. The spinal implant of claim 208, wherein said opposed side facets of said first plurality of bone engaging structures converge to form a peak at the top of each of said surface projections of said first plurality of bone engaging structures.

210. The spinal implant of claim 209, wherein said peaks are aligned along lines that are at least one of perpendicular, parallel, and diagonal to the longitudinal axis of said implant.

211. The spinal implant of claim 203, wherein said side facets of said first plurality of bone engaging structures have a second portion at an angle, wherein the angles of said first portion and said second portion are different.

212. The spinal implant of claim 203, wherein at least one of said surface projections of said first plurality of bone engaging structures includes a left forward side facet and a right forward side facet directed toward said leading end and said sides, respectively, of said implant.

213. The spinal implant of claim 203, wherein at least one of said surface projections of said first plurality of bone engaging structures includes a left rearward

side facet and a right rearward side facet directed toward said trailing end and sides, respectively, of said implant.

214. The spinal implant of claim 212, wherein at least one of said surface projections of said first plurality of bone engaging structures includes a left rearward side facet and a right rearward side facet directed toward said trailing end and sides, respectively, of said implant.

215. The spinal implant of claim 203, wherein adjacent side facets of adjacent surface projections of said first plurality of bone engaging structures are spaced apart to define a groove therebetween.

216. The spinal implant of claim 215, wherein a plurality of adjacent surface projections are spaced apart to form a plurality of grooves therebetween.

217. The spinal implant of claim 216, wherein at least one of said grooves is parallel to the longitudinal axis of said implant.

218. The spinal implant of claim 216, wherein at least one of said grooves is at an angle to the longitudinal axis of said implant.

219. The spinal implant of claim 218, wherein said angle is less than 90 degrees to the longitudinal axis of said implant.

220. The spinal implant of claim 218, wherein at least two of said grooves cross each other.

221. The spinal implant of claim 216, wherein at least one of said grooves has a horizontal cross-sectional shape selected from one of a v-shape, u-shape, and a box-like shape.

222. The spinal implant of claim 203, wherein said upper and lower surfaces of said implant are at least in part arcuate.

223. The spinal implant of claim 203, wherein said upper and lower surfaces of said implant are at least in part planar.

224. The spinal implant of claim 203, wherein said upper and lower surfaces converge along the length of said implant.

225. The spinal implant of claim 203, wherein said upper and lower surfaces include at least one opening to permit bone growth from one of the adjacent vertebral bodies to the other one of the adjacent vertebral bodies through said implant.

226. The spinal implant of claim 203, wherein said implant has an internal chamber and an access opening for accessing said internal chamber.

227. The spinal implant of claim 203, wherein said second and third plurality of bone engaging structures are interspersed with said first plurality of bone engaging structures.

228. The spinal implant of claim 203, wherein said surface projection of said first bone engaging structures have a length approximating the combined length of said surface projections of said second and third bone engaging structures.

229. The spinal implant of claim 203, wherein said forward facet of said third plurality of bone engaging structures is perpendicular to at least one of said upper and lower surfaces of said implant.

230. The spinal implant of claim 203, wherein said forward facet of said third plurality of bone engaging structures is at an angle to at least one of said upper and lower surfaces of said implant.

231. The spinal implant of claim 230, wherein said angle is less than 90 degrees.

232. The spinal implant of claim 203, wherein said left and right rearward side facets of said third plurality of bone engaging structures intersect each other.

233. The spinal implant of claim 203, wherein adjacent left and right rearward side facets of adjacent surface projections of said third plurality of bone engaging structures are spaced apart to define a groove therebetween.

234. The spinal implant of claim 203, wherein said implant is made at least in part of bone.

235. The spinal implant of claim 203, wherein said implant is made at least in part of a metal.

236. The spinal implant of claim 203, in combination with a fusion promoting substance.

237. The spinal implant of claim 236, wherein said fusion promoting substance includes at least one of bone morphogenetic protein, hydroxyapatite, genes coding for the production of bone, and bone.

238. The spinal implant of claim 57, in combination with a fusion promoting substance.

239. The spinal implant of claim 238, wherein said fusion promoting substance includes at least one of bone morphogenetic protein, hydroxyapatite, genes coding for the production of bone, and bone.

240. The spinal implant of claim 146, in combination with a fusion promoting substance.

241. The spinal implant of claim 240, wherein said fusion promoting substance includes at least one of bone morphogenetic protein, hydroxyapatite, genes coding for the production of bone, and bone.